

Table 1

Case no.	Age at onset (yr)	Sex	Family history	Initial symptoms	Course	Outcome
1	10	F	-	Seizures	Progressive	Death
2	10	M	-	Seizures	Progressive	Death
3	10	M	-	Seizures	Progressive	Death
4	10	M	-	Seizures	Progressive	Death
5	10	M	-	Seizures	Progressive	Death
6	10	M	-	Seizures	Progressive	Death
7	10	M	-	Seizures	Progressive	Death
8	10	M	-	Seizures	Progressive	Death
9	10	M	-	Seizures	Progressive	Death
10	10	M	-	Seizures	Progressive	Death
11	10	M	-	Seizures	Progressive	Death
12	10	M	-	Seizures	Progressive	Death
13	10	M	-	Seizures	Progressive	Death
14	10	M	-	Seizures	Progressive	Death
15	10	M	-	Seizures	Progressive	Death
16	10	M	-	Seizures	Progressive	Death
17	10	M	-	Seizures	Progressive	Death
18	10	M	-	Seizures	Progressive	Death
19	10	M	-	Seizures	Progressive	Death
20	10	M	-	Seizures	Progressive	Death
21	10	M	-	Seizures	Progressive	Death
22	10	M	-	Seizures	Progressive	Death
23	10	M	-	Seizures	Progressive	Death
24	10	M	-	Seizures	Progressive	Death
25	10	M	-	Seizures	Progressive	Death
26	10	M	-	Seizures	Progressive	Death
27	10	M	-	Seizures	Progressive	Death
28	10	M	-	Seizures	Progressive	Death
29	10	M	-	Seizures	Progressive	Death
30	10	M	-	Seizures	Progressive	Death
31	10	M	-	Seizures	Progressive	Death
32	10	M	-	Seizures	Progressive	Death
33	10	M	-	Seizures	Progressive	Death
34	10	M	-	Seizures	Progressive	Death
35	10	M	-	Seizures	Progressive	Death
36	10	M	-	Seizures	Progressive	Death
37	10	M	-	Seizures	Progressive	Death
38	10	M	-	Seizures	Progressive	Death
39	10	M	-	Seizures	Progressive	Death
40	10	M	-	Seizures	Progressive	Death
41	10	M	-	Seizures	Progressive	Death
42	10	M	-	Seizures	Progressive	Death
43	10	M	-	Seizures	Progressive	Death
44	10	M	-	Seizures	Progressive	Death
45	10	M	-	Seizures	Progressive	Death
46	10	M	-	Seizures	Progressive	Death
47	10	M	-	Seizures	Progressive	Death
48	10	M	-	Seizures	Progressive	Death
49	10	M	-	Seizures	Progressive	Death
50	10	M	-	Seizures	Progressive	Death
51	10	M	-	Seizures	Progressive	Death
52	10	M	-	Seizures	Progressive	Death
53	10	M	-	Seizures	Progressive	Death
54	10	M	-	Seizures	Progressive	Death
55	10	M	-	Seizures	Progressive	Death
56	10	M	-	Seizures	Progressive	Death
57	10	M	-	Seizures	Progressive	Death
58	10	M	-	Seizures	Progressive	Death
59	10	M	-	Seizures	Progressive	Death
60	10	M	-	Seizures	Progressive	Death
61	10	M	-	Seizures	Progressive	Death
62	10	M	-	Seizures	Progressive	Death
63	10	M	-	Seizures	Progressive	Death
64	10	M	-	Seizures	Progressive	Death
65	10	M	-	Seizures	Progressive	Death
66	10	M	-	Seizures	Progressive	Death
67	10	M	-	Seizures	Progressive	Death
68	10	M	-	Seizures	Progressive	Death
69	10	M	-	Seizures	Progressive	Death
70	10	M	-	Seizures	Progressive	Death
71	10	M	-	Seizures	Progressive	Death
72	10	M	-	Seizures	Progressive	Death
73	10	M	-	Seizures	Progressive	Death
74	10	M	-	Seizures	Progressive	Death
75	10	M	-	Seizures	Progressive	Death
76	10	M	-	Seizures	Progressive	Death
77	10	M	-	Seizures	Progressive	Death
78	10	M	-	Seizures	Progressive	Death
79	10	M	-	Seizures	Progressive	Death
80	10	M	-	Seizures	Progressive	Death
81	10	M	-	Seizures	Progressive	Death
82	10	M	-	Seizures	Progressive	Death
83						

2. The method of claim 1, wherein:

receiving a data packet includes receiving a data packet via a first network interface;

sending at least the payload of the data packet to the first network application includes

sending at least the payload of the data packet to the first network application via a

second network interface, the second network interface being different than the first

network interface; and

sending at least the payload of the data packet to the second network application includes

sending at least the payload of the data packet to the second network application via the

second network interface.

3. The method of claim 1, further comprising:

receiving a third network application response packet from the third network application; and
sending a service response packet to a source address of the data packet, the service response packet based at least in part on the third network application response packet.

4. The method of claim 1, further comprising:

receiving a first network application response from the first network application;
identifying the second network application based at least in part on the first network application response; and
sending at least a portion of the first network application response to the second network application.

5. The method of claim 2, further comprising:

receiving a first network application response from the first network application on the second network interface;
identifying the second network application based at least in part on the first network application response and the second network interface; and
sending at least a portion of the first network application response to the second network application.

6. The method of claim 2, wherein sending at least the payload of the data packet to the first network application includes:

identifying the first network application based at least in part on the service address of the data packet and the first network interface; and

sending at least the payload of the data packet to the first network application via a second network interface.

7. The method of claim 1, wherein:

the first network application has a first network application address and the second network application has a second network application address;

sending at least the payload of the data packet to the first network application includes identifying the first network application address based at least in part on the service address; and

sending at least the payload of the data packet to the second network application includes identifying the second network application address based at least in part on the service address.

8. The method of claim 7, wherein:

the data packet includes a service port identifier;

sending at least the payload of the data packet to the first network application includes identifying the first network application address based at least in part on the service port identifier; and

sending at least the payload of the data packet to the second network application includes identifying the second network application address based at least in part on the service port identifier.

9. The method of claim 2, wherein:

the first network application has a first network application address and the second network application has a second network application address;

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sending at least the payload of the data packet to the first network application includes
identifying the first network application address based at least in part on the service
address and the first network interface; and

sending at least the payload of the data packet to the second network application includes
identifying the second network application address based at least in part on the service
address and the first network interface.

10. The method of claim 9, wherein:

the data packet includes a service port identifier;

sending at least the payload of the data packet to the first network application includes
identifying the first network application address based at least in part on the service port
identifier; and

sending at least the payload of the data packet to the second network application includes
identifying the second network application address based at least in part on the service
port identifier.

11. The method of claim 9, wherein:

the second network application response packet includes a second network application
response source address;

the third network application has a third network application address; and

sending a third network application packet to the third network application includes
identifying the third network application address based at least in part on the second
network application response source address.

12. The method of claim 11, wherein the first network application address is different from the first network application response source address.

13. The method of claim 11, wherein the first network application address is the same as the first network application response source address.

14. The method of claim 2, wherein:

receiving a second network application response packet from the second network application includes receiving the second network application response packet from a third network interface, the third network interface being different from the second network interface and the first network interface; and
sending a third network application packet to the third network application includes sending the third network application packet to the third network application via a fourth network interface, the fourth network interface being different from the third network interface, the second network interface, and the first network interface.

15. The method of claim 14, further comprising:

receiving a third network application response packet from the third network application via the fourth network interface;
sending a second network application return packet to the second network application via the third network interface, the second network application return packet based at least in part on the third network application response packet;
receiving a second network application return response packet from the second network application via the second network interface; and

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sending a service response packet via the first network interface, the service response packet based at least in part on the second network application return response packet.

16. The method of claim 15, further comprising:

sending a first network application return packet to the first network application via the second network interface, the first network application return packet based at least in part on the second network application return response packet.

17. The method of claim 1, wherein:

sending at least the payload of the data packet to the first network application is based at least in part on a stateless identification of the first network application;
sending at least the payload of the data packet to the second network application is based at least in part on a stateless identification of the second network application; and
sending the third network application packet to the third network application is based at least in part on a stateless identification of the third network application.

23. A method to manage delivery of a network service, the method comprising:

receiving a data packet having a service address and a payload;

identifying a plurality of network applications based at least in part on the service address,

the plurality of network applications including at least a first network application, a second network application, and a third network application;

distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address;

sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address; and

sending a data packet service response based at least in part on the data packet sequential processing.

24. The method of claim 23, wherein sequentially processing the data packet through at least the second network application and the third network application consists essentially of statelessly sequentially processing the data packet through at least the second network application and the third network application.

25. The method of claim 23, wherein:

receiving a data packet having a service address and a payload includes receiving the data packet via a first network interface;

distributing at least the payload of the data packet to the first network application and the second network application includes distributing at least the payload of the data packet to the first network application and the second network application via a second network interface, the second network interface being different from the first network interface;

a third network interface to receive a second network application response packet, the third network interface being different from the second network interface and the first network interface; and

a fourth network interface to send a third network application packet to the third network application, the third network application packet based at least in part on the second network application response packet, the third network application being different from the first network application, the fourth network interface being different from the third network interface, the second network interface, and the first network interface.

29. The system of claim 28, wherein:

a packet distribution entry of the one or more packet distribution entries includes

a received interface field to store a received interface identifier, and

a send interface field to store a send interface identifier; and

a packet sequencing entry of the one or more packet sequencing entries includes

a received interface field to store a received interface identifier; and

a send interface field to store a send interface identifier.

30. The system of claim 28, wherein:

the data packet includes a first service port identifier;

a packet distribution entry of the one or more packet distribution entries includes a service port field to store a service port identifier; and

a packet sequencing entry of the one or more packet sequencing entries includes a service port field to store a service port identifier.

31. The system of claim 28, wherein:

the data packet includes a first service port identifier;

a packet distribution entry of the one or more packet distribution entries includes

a received interface field to store a received interface identifier,

a service port field to store a service port identifier,

a send interface field to store a send interface identifier, and

a send address field to store a send address; and

a packet sequencing entry of the one or more packet sequencing entries includes

a received interface field to store a received interface identifier,

a service port field to store a service port identifier,

a send interface field to store a send interface identifier, and

a send address field to store a send address.

32. The system of claim 31, wherein the send address is a network address of a network application system of the plurality of network application systems.

33. The system of claim 31, wherein the send address is a media access controller address of a network application system of the plurality of network application systems.

34. The system of claim 31, wherein each packet distribution entry of the plurality of packet distribution entries includes a destination system type field to store a destination system type identifier.

35. The system of claim 28, wherein the first network application system is a first implementation of one network application system and the second network application system is a second implementation of the one network application system.

36. The system of claim 28, further comprising a plurality of network application systems, one or more of the plurality of network application systems coupled to one or more of the second network interface, the third network interface, and the fourth network interface.

37. The system of claim 36, wherein the plurality of network application systems include one or more of an intrusion detection application, a virus detection application, a virtual private network application, a firewall application, a web switch, a network security application, a proxy application, a database application, and a load balancing application.

38. The system of claim 28, wherein:

the first network application system is selected from the group consisting of an intrusion detection application, a virus detection application, a firewall application, a web switch, a network security application, and a load balancing application; and

the second network application system is a different network application selected from the group consisting of an intrusion detection application, a virus detection application, a virtual private network application, a firewall application, a web switch, a network security application, a proxy application, a database application, and a load balancing application.

39. The system of claim 28, wherein the data packet uses one or more protocols of one of a TCP/IP network protocol suite and a UDP/IP network protocol suite.

40. The system of claim 39, wherein the one or more protocols includes an IPv4 network protocol.

41. The system of claim 39, wherein the one or more protocols includes an IPv6 network protocol.

42. The system of claim 28, wherein the data packet uses one or more of a layer 2 protocol, a layer 3 protocol, and a layer 4 protocol.

43. The system of claim 42, wherein the layer 2 protocol is selected from the group consisting of ATM and frame relay.

44. The system of claim 42, wherein the layer 3 protocol is MPLS.

45. The system of claim 28, wherein the packet processing information lacks information that supports stateful processing.

46. The system of claim 28, wherein the packet processing information includes information that supports stateful processing.

47. The system of claim 28, wherein the packet processing information consists essentially of information that supports stateless processing.

48. The system of claim 28, further comprising:

a first access control list associated with a first customer, the data packet received from the first customer; and

a second access control list associated with a second customer, the first access control list and the second access control list to manage network access to a shared firewall application.

49. A system to manage delivery of a network service, the system comprising:

means for receiving a data packet having a service address and a payload;

means for identifying a plurality of network applications based at least in part on the service address, the plurality of network applications including at least a first network application, a second network application, and a third network application;

means for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address;

means for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address; and

means for sending a data packet service response based at least in part on the data packet sequential processing.

50. The system of claim 49, wherein the means for sequentially processing the data packet through at least the second network application and the third network application includes means for statelessly sequentially processing the data packet through at least the second network application and the third network application.

51. The system of claim 49, wherein:

the means for receiving a data packet having a service address and a payload includes means for receiving the data packet via a first network interface;

the means for distributing at least the payload of the data packet to the first network application and the second network application includes means for distributing at least the payload of the data packet to the first network application and the second network application via a second network interface, the second network interface being different from the first network interface;

the means for sequentially processing the data packet through at least the second network application and the third network application includes means for sequentially processing the data packet through at least the second network application and the third network application via the second network interface and one or more additional network interfaces, the one or more additional network interfaces being different from the first network interface and the second network interface; and

the means for sending a data packet service response includes means for sending the data packet service response via the first network interface.

52. The system of claim 51, wherein:

the means for receiving a data packet includes means for receiving a data packet including a service port identifier;

the means for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address includes means for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address and the service port identifier; and

the means for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address includes means for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address and the service port identifier.

53. A method to manage delivery of a network service, the method comprising:

a step for receiving a data packet having a service address and a payload;

a step for identifying a plurality of network applications based at least in part on the service address, the plurality of network applications including at least a first network application, a second network application, and a third network application;

a step for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address;

a step for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address; and

a step for sending a data packet service response based at least in part on the data packet sequential processing.

54. The method of claim 53, wherein the step for sequentially processing the data packet through at least the second network application and the third network application includes a step for statelessly sequentially processing the data packet through at least the second network application and the third network application.

55. The method of claim 53, wherein:

the step for receiving a data packet having a service address and a payload includes a step for receiving the data packet via a first network interface;

the step for distributing at least the payload of the data packet to the first network application and the second network application includes a step for distributing at least the payload of the data packet to the first network application and the second network application via a second network interface, the second network interface being different from the first network interface;

the step for sequentially processing the data packet through at least the second network application and the third network application includes a step for sequentially processing the data packet through at least the second network application and the third network application via the second network interface and one or more additional network interfaces, the one or more additional network interfaces being different from the first network interface and the second network interface; and

the step for sending a data packet service response includes a step for sending the data packet service response via the first network interface.

56. The method of claim 55, wherein:

the step for receiving a data packet includes a step for receiving a data packet including a service port identifier;

the step for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address includes a step for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address and the service port identifier; and

the step for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address includes a step for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address and the service port identifier.

57. The method of claim 56, wherein the step for sending a data packet service response based at least in part on the data packet sequential processing includes a step for generating the data packet service response as a data product based at least in part on the data packet sequential processing.

58. A computer-readable medium storing a plurality of instructions to be executed by a processor to manage delivery of data to a plurality of network applications, the plurality of instructions comprising instructions to:

receive a data packet having a service address and a payload;

identify a plurality of network applications based at least in part on the service address, the plurality of network applications including at least a first network application, a second network application, and a third network application;

distribute at least the payload of the data packet to the first network application and the second network application based at least in part on the service address;

sequentially process the data packet through at least the second network application and the third network application based at least in part on the service address; and

send a data packet service response based at least in part on the data packet sequential processing.

59. The computer-readable medium of claim 58, wherein the instructions to sequentially process the data packet through at least the second network application and the third network application include instructions to statelessly sequentially process the data packet through at least the second network application and the third network application.

60. The computer-readable medium of claim 58, wherein:

the instructions to receive a data packet having a service address and a payload include instructions to receive the data packet via a first network interface;

the instructions to distribute at least the payload of the data packet to the first network application and the second network application include instructions to distribute at least the payload of the data packet to the first network application and the second network application via a second network interface, the second network interface being different from the first network interface;

the instructions to sequentially process the data packet through at least the second network application and the third network application include instructions to sequentially process the data packet through at least the second network application and the third network application via the second network interface and one or more additional network interfaces, the one or more additional network interfaces being different from the first network interface and the second network interface; and

the instructions to send a data packet service response include instructions to send the data packet service response via the first network interface.

61. The computer-readable medium of claim 60, wherein:

the instructions to receive a data packet include instructions to receive a data packet including a service port identifier;

the instructions to distribute at least the payload of the data packet to the first network application and the second network application based at least in part on the service address include instructions to distribute at least the payload of the data packet to the first network application and the second network application based at least in part on the service address and the service port identifier; and

the instructions to sequentially process the data packet through at least the second network application and the third network application based at least in part on the service address include instructions to sequentially process the data packet through at least the second network application and the third network application based at least in part on the service address and the service port identifier.

62. A method of delivering data to a plurality of network applications, the method comprising:

- receiving a first data packet, the first data packet including a first service address and a first data packet payload;
- identifying a first plurality of network applications associated with the first service address, the first plurality of network applications associated with the first service address including a first network application, a second network application, and a third network application;
- sending at least the first data packet payload to the first network application;
- sending at least the first data packet payload to the second network application;
- receiving a second network application response packet from the second network application;
- sending a third network application packet to the third network application, the third network application packet based at least in part on the second network application response packet;
- receiving a second data packet, the second data packet including a second service address and a second data packet payload;
- identifying a second plurality of network applications associated with the second service address, the second plurality of network applications associated with the second service address including a fourth network application, a fifth network application, and a sixth network application;
- sending at least the second data packet payload to the fourth network application;
- sending at least the second data packet payload to the fifth network application;
- receiving a fifth network application response packet from the fifth network application; and

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sending a sixth network application packet to the sixth network application, the sixth network application packet based at least in part on the fifth network application response packet.

63. The method of claim 62, wherein:

receiving a first data packet includes receiving the first data packet at an Internet service provider; and

receiving a second data packet includes receiving the second data packet at an Internet service provider.

64. The method of claim 62, wherein at least one network application of the first plurality of network applications and the second plurality of network applications includes a passive real-time intrusion detection application.

65. The method of claim 62, wherein at least one network application of the first plurality of network applications includes a remote network application.

66. The method of claim 65, wherein the remote network application is an Internet network application.

67. The method of claim 62, wherein:

the first data packet is received from a first customer; and

the second data packet is received from a second customer, the first customer being different from the second customer.

68. The method of claim 67, wherein the first network application and the fourth network application are the same network application.

69. The method of claim 67, wherein the second network application and the fifth network application are the same network application.

70. The method of claim 67, further comprising:

receiving a first service management instruction from the first customer;

modifying a first service data record corresponding to the first service address based at least in part on the first service management instruction;

receiving a second service management instruction from the second customer; and

modifying a second service data record corresponding to the second service address based at least in part on the second service management instruction.

71. The method of claim 62, further comprising determining an addition of a redundant network application, the redundant network application being the same as one or more network applications of the first plurality of network applications.

72. The method of claim 71, further comprising:

detecting a failed network application of the first plurality of network applications; and

directing a third data packet to the redundant network application based at least in part on detecting the failed network application.

73. A system to manage delivery of one or more network services, the system comprising:
a first packeting engine, the first packeting engine including

first means for receiving a data packet having a service address and a payload,

first means for identifying a plurality of network applications based at least in part on the service address, the plurality of network applications including at least a first network application, a second network application, and a third network application,

first means for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address,

first means for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address, and

first means for sending a data packet service response based at least in part on the data packet sequential processing.

74. The system of claim 73, wherein the data packet includes a service port identifier.

75. The system of claim 74, wherein the first packeting engine includes means for service port translation.

76. The system of claim 75, wherein the means for service port translation contains means for packeting engine service port translation.

77. The system of claim 74, wherein one or more of the first network application, the second network application, and the third network application include means for application service port negotiation.

78. The system of claim 74, wherein one or more of the first network application, the second network application, and the third network application include means for application service address negotiation.

79. The system of claim 73, wherein the first packeting engine includes means for tracking packet progress.

80. The system of claim 73, wherein the first network application and the second network application are different vendor implementations of a network application.

81. The system of claim 73, wherein the first packeting engine performs TCP stateless load balancing of a plurality of service addresses to multiple applications.

82. The system of claim 73, wherein the first packeting engine performs TCP stateless load balancing of the service address to multiple applications.

83. The system of claim 73, further comprising:

a second packeting engine, the second packeting engine coupled to the first packeting engine,

the second packeting engine including

a second means for receiving the data packet having the service address and the payload,

a second means for identifying the plurality of network applications based at least in part on the service address, the plurality of network applications including at least the first network application, the second network application, and the third network application,

a second means for distributing at least the payload of the data packet to the first network application and the second network application based at least in part on the service address,

a second means for sequentially processing the data packet through at least the second network application and the third network application based at least in part on the service address, and

a second means for sending the data packet service response based at least in part on the data packet sequential processing.

84. The system of claim 83, wherein the first packeting engine and the second packeting engine are stateless, redundant packeting engines.

85. The system of claim 83, further comprising means for load sharing between the first packeting engine and the second packeting engine.

86. The system of claim 83, wherein the first packeting engine is to handle inbound traffic and the second packeting engine is to handle outbound traffic.

87. The system of claim 83, wherein the first packeting engine and the second packeting engine perform TCP stateless load balancing for the service address.

88. The system of claim 83, wherein the first packeting engine and the second packeting engine are part of an network service provider system.